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THE GAS JOURNAL

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A Glance at the Contents—

"Motor Benzole, Its Production and Use."

This book, by W. H. Hoffert, M.A., B.Sc., F.I.C., and G. Claxton, M.Sc., Research Chemists to the National Benzole Association, is reviewed in our columns to-day by Mr. E. W. Muddiman, B.Sc., F.I.C. [p. 873.]

Whessoe Foundry and Engineering Company Meeting.

The Eleventh Annual General Meeting of the Whessoe Foundry and Engineering Company, Ltd., was held on June 11 at 25, Victoria Street, S.W. 1—Mr. Harold G. Judd, C.B.E. (the Chairman of the Company), presiding. [p. 881.]

Congress of the French Gas Industry.

The Annual Congress of the Association Technique de l'Industrie du Gaz en France took place from April 21 to 25 in Algiers. Summaries of some of the papers presented were given in last week's "JOURNAL," and a further set is published in to-day's issue. [p. 872.]

Cannock, Brownhills and District Gas Order.

On Monday and Tuesday, June 1 and 2, Mr. J. F. Ronca (Director of Gas Administration) held an inquiry, at the Board of Trade Offices, Great George Street, Westminster, into the proposals of the Special Order, promoted under the Gas Undertakings Acts of 1920 and 1929, by the Cannock, Hednesford, and District Gas Company, Ltd., the chief purpose of which is to enable that Company to acquire by agreement the undertaking of the Ogley Hay and Brownhills Gas Company, Ltd., which is supplying gas in an adjoining district. It is also sought to extend the area of supply of the proposed amalgamated undertaking, to include certain adjoining parishes. [p. 882.]

Sheffield Gas Bill.

A report is published of the progress of this Bill in examination by a House of Commons Committee. The main purposes of the Bill are to enlarge and alter the powers and obligations of the Sheffield Gas Company with respect to the purchase and supply of coke oven gas, to extend the Company's ordinary limits of supply, and to increase its borrowing powers. [p. 884.]

Association of Statutory Inspectors of Gas Meters.

The Association of Statutory Inspectors of Gas Meters held their Annual General Meeting on Wednesday, June 3, 1931, at the County Hall, Westminster Bridge, London. Later on the same day the members visited the Meter Workshops of the South Metropolitan Gas Company, at the invitation of the President (Dr. Charles Carpenter) and Directors of the Company. The President of the Association (Mr. H. N. Barrow, J.P., the Chairman of the Manchester Justices' Gas Meter Testing Committee) was in the chair at the Annual General Meeting. [p. 878.]

Malta and Mediterranean Gas Company Meeting.

The Ordinary General Meeting of the shareholders of the Malta and Mediterranean Gas Company, Ltd., was held on Tuesday, June 9, at the Offices of the Company, 59-60, Gracechurch Street, E.C. 3—Mr. A. M. Paddon, M.Inst.C.E., Chairman of Directors, presiding. A dividend of 5 p.ct. (making, with the interim dividend paid in December last, 10 p.ct. for the year) free of income-tax was declared on the ordinary shares, and dividends of 3½ p.ct. and 3¾ p.ct., less income-tax, were declared on the first and second preference shares respectively. [p. 881.]

TO OUR FRIENDS IN AMERICA

We are pleased to announce that Mr. Robert O. Luqueer, of New York, has become the United States Agent for our publications. Mr. Luqueer is a member of the well-known American Consulting Engineering firm of Messrs. Forstall, Robison, & Luqueer. His early experience in the gas business was in England, as cadet engineer in the employ of Messrs. Humphreys & Glasgow, of London. Returning to the United States, he continued with the American concern, becoming Secretary upon its incorporation, and later a Director. Altogether he was associated in business for twenty-three years with the late Dr. Alexander C. Humphreys, who was known to many in this country both as a gas engineer and President of Stevens Institute of Technology. Mr. Luqueer served one year as Acting Secretary of the American Gas Institute, and is a member of the American Gas Association and the Society of Gas Lighting of New York, and an associate member of the Illuminating Engineering Society.

Hereafter all new subscriptions in the United States will be taken by the New York Agency, and after December, 1931, our present subscribers in the States, with a few special exceptions, will make their renewals through that Agency, which we believe they will find to be a convenience.

EDITORIAL NOTES

Written Communications

THERE is plenty of evidence in to-day's "JOURNAL" that, had time allowed, there would, as we anticipated, have been a most valuable discussion on Mr. Thorman's paper before the Institution. Without, however, bewailing what might have been, we would call attention to the fact that several important written communications not only on this paper but also on the contributions of Dr. Schütte and Dr. Lessing are published to-day; and we desire to give emphasis to some of the points in these written communications. Dealing first with Mr. Thorman's paper, Mr. A. H. Lymn—who, as many of our readers are aware, is interested in the "C.O.L." plant—states boldly, but with good reason, that the author has well demonstrated that the system of carbonization known as intermittent vertical chambers is now an established success in this country, and that engineers may install them with entire confidence for use with all kinds of coal. And we share Mr. Lymn's anticipation of the publication of the results of operating "C.O.L." plants at the Brentford Station of the Gas Light and Coke Company and at the Works of the Portsmouth and District Gas Company.

Several interesting questions are asked by Mr. C. S. Shapley in regard to the method of working the Woodall-Duckham plant at Southall; while Mr. G. M. Gill suggests that it would be a good step in advance if, by employing venturi injectors on the producers, it became practicable to consume breeze and small coke, and so render available a larger quantity of coke for sale. As to the flexibility of the plant, he observes that one of the most interesting matters contained in the paper is Mr. Thorman's statement that the plant, when working at about 60 p.ct. of its normal capacity, is at least equally efficient in the important matter of the yield of coke for sale per ton of coal carbonized. It has been mainly this bogey which has prevented gas engineers from working their carbonizing plant at low capacity during summer months, in preference to shutting down such portion as is not required. The yield of gas per ton of coal is not affected by the reduced output of the plant, and it would appear that the only item of cost which is affected by working at low capacity is that of carbonizing wages; but this can be considered to be relatively unimportant, as the cost of carbonizing wages per therm in the summer months is always considerably higher, however the plant may be worked. "There is no gainsaying the fact," states Mr. Gill, "that the policy of working carbonizing plant at low capacity during the summer months would greatly reduce the maintenance costs of any carbonizing plant and would proportionately increase its useful life."

Convincing the Sceptical

MR. L. H. SENSICLE, who suggests that Mr. Thorman's paper should convince the most sceptical that intermittent vertical chambers are established as a sound and efficient system of carbonization, gives reasons why water gas production in vertical chambers is more efficient than in water gas plant; and he also makes an interesting suggestion in regard to the use for road purposes of the tar separated at the electrostatic precipitators. Mr. Thorman is employing creosote for adjusting viscosity, but Mr. Sensicle thinks that the light oil condensed in the coolers should be collected in trays and allowed to stand. "Naphthalene will be deposited, and the supernatant oil can be run off and used as the necessary diluent for the road tar. Furthermore, dehydration of the tar can be effected by agitating the tar with compressed air at 60° C., while the dilution and addition of bitumen are performed." Mr. Sensicle obtained patents about six years ago for this process, after finding it suitable in practice; and he mentions that the tar so made is lower in phenols and naphthalene than that produced by distillation methods.

Mr. A. G. Grant characterizes the Southall plant as one designed with unusually liberal arrangements for quantitative measurement at all points—in fact, it represents a nearer approach to the ideal plant of the chemical engineer—a plant in which every quantity and physical state can be measured at every stage of the process. Mr. J. Kirkhope breaks a lance with Mr. Thorman on several points. He doubts, for example, whether Durham coals can be looked upon as efficient raw material for carbonization in continuous vertical retorts; he believes in the virtues of a slight camber to the side walls of the chamber; and he considers that the advantages of water-cooled tie rods are illusory.

Turning to Dr. Lessing's paper, we heartily endorse Mr. Gill's belief that the Gas Industry would derive great benefit from the sale of clean coke, for it would raise this fuel to the same grade as the high-class Welsh and anthracite coals which in normal times fetch very high prices. "There is no gainsaying the fact that the coke market of the future depends very largely on its quality. If its quality could be transformed in the manner described by Dr. Lessing, the Gas Industry would derive the greatest possible benefit. This subject so strongly advocated by Dr. Lessing is clearly one which should have our active co-operation."

Highly interesting, too, are the observations of the Chief Inspector of Alkali Works on the beneficial effect of Dr. Lessing's process on the chlorine content of the coal to be carbonized. Apart from the effect on retorts and furnace linings, a high chlorine content in coal is reflected in the ammonium chloride content of the tar produced from it, with consequent ill effects on tar stills. The experience of tar distillers has shown that even so low an amount of ammonium chloride in the tar as 0·1 p.ct. is above the limit compatible with longevity of tar stills. In the recently published 67th Alkali Report the results of an investigation into the causes of tar still corrosion are published, which show that this amount is often exceeded, and which show clearly that the observed corrosion of tar stills is mainly due to the presence in the tar of ammonium chloride. The general application of a system of pre-treatment of coal which results in a considerable diminution of the chlorine content should result in a greatly reduced rate of corrosion of tar stills.

Signs of Returning Confidence

THERE has occurred an encouraging change of feeling during the last few days in City circles, there having been several consecutive sessions of rising prices on the Stock Exchange. This may not be an infallible indication that industrial trading conditions are really on the mend, because there are sometimes other influences which may more vitally affect the financial situation. Ordinarily money is apt to find its way to the Stock Exchange when opportunities do not offer for its employment in industry. But present circumstances are exceptional; investors have received innumerable shocks, and probably that which is most needed now is a renewal of confidence. The unprecedented scaling-down of the market value of industrial undertakings—unfortunately partly justified, but often, also, carried much farther than conditions warrant—has so affected investors that obviously much capital has been withheld from the ordinary channels of business. To the extent that the

tendency towards higher prices points to a reversal of this policy on the part of investors, it is of special significance, as evidence of a return of that confidence which, as we have just remarked, is essential to an industrial revival. Addressing recently the Federation of Chambers of Commerce of the British Empire, Sir John Simon stressed the importance of a general restoration of confidence, both internationally and in the trading community. "If we can get that," he declared, "whether in the City of London or in other branches of commerce, then at last we can claim that we have turned the corner."

But though lack of confidence has been mentioned here as an obstacle which must be surmounted, it should not for a moment be forgotten that there are also others. The first of these, undoubtedly, is the ruinously high rate of public expenditure, and the refusal seriously to take in hand the enforcement of economy. So much ingenuity is expended upon carrying into effect fresh means of meeting growing expenditure, that no energy, it seems, can be spared for implementing suggestions for attacking this growth. It must, alas, be admitted that there are few signs of firm determination to do so. The interim report of the Royal Commission on Unemployment Insurance contains a number of recommendations, though the full comments of the members have been reserved for a final report. As one may take the Commission to be a body of the Government's own choosing, one should likewise be able to assume that the Government would act upon its recommendations. These recommendations, however, proved unpopular, as economies are so liable to do. They reduce the rates of benefits, tighten-up the qualifications of participants, and increase the rates of contribution. They also deal with anomalies and abuses. At the moment, little hope is expressed that the Government will do much beyond remedying certain of the admitted abuses.

If it is true, as reported, that the Government are unwilling to increase the weekly contributions to the fund, "and so place a fresh burden upon industry at such a time as the present," many people would like to see the same feeling extended to the proposals contained in the land tax clauses of the Finance Bill. With regard to these, it may be remarked that the Federation of British Industries have prepared a memorandum in which it is urged that land used for industrial purposes can only be regarded as a complementary part of the whole of the machinery of industry, in the same way as the buildings or the actual process plant. The Finance Bill, therefore, introduces an entirely new principle into the taxation of industry, in that for the first time a tax is to be imposed upon one "tool" of industry without consideration of earnings derived from its use. Against this principle the Federation strongly protest. It is insisted that the proposed taxation must inevitably increase costs. So there is some inconsistency in the Government's attitude towards the recommendations of the Royal Commission on Unemployment Insurance, when viewed in the light of the land tax clauses of the Finance Bill.

Preparedness

WHETHER or not the signs of returning confidence to which reference has been made are conclusive, it is certainly time now to anticipate the turn of the tide, and manufacturers all over the country will look to the Gas Industry to be prepared to the last degree of thoroughness to take its share in the business revival. In all directions an unfailingly adequate supply of constant quality gas at the cheapest practicable price will play a vital part in the country's trade recovery. That the Industry will be ready to respond to all demands that may be made upon it, we have no doubt. Many times we have urged this preparedness. The Industry must ever keep in mind its essential rôle, as a public utility service, in the business life of the community. If others forget it, we must remind them. And there is plenty of evidence that some people do not sufficiently bear it in mind. As one popular newspaper put it a few days ago: "If the expected revival of world trade began to-morrow, many sections of British industry would be at once outpaced by foreign competitors. We are not properly equipped to cope with a revival. Our deficiency may be summed up in a single word: Electrification." While so much is done to boost electricity, the Gas Industry must obviously be unceasing in its own propaganda. It is a duty to keep the public completely informed of all that gas is doing, and can do. So far as heating and power are concerned, our manufacturers, in spite of the "deficiency" above referred to, need not despair, where there is a gas supply available of the kind which we have just specified.

How little help gas can expect to receive from outside sources has been exemplified on many occasions; the latest instance, perhaps, being in connection with the Yorkshire Show, arranged to be held at Huddersfield this year. The Ministry of Agriculture and Fisheries, fathering the National Mark movement, decided to run a stand, and in reply to inquiries the Huddersfield Gas Department offered to supply cookers and gas, and to provide a cookery lecturer who would use only National Mark products. It was, however, learned at a recent meeting that, in a subsequent communication, the Ministry declined this offer, and informed the Gas Department (who had never raised any difficulty about supplying the gas) that arrangements had already been made for cookery demonstrations to be given in the Ministry's pavilion at all shows to be visited this season, and that the same electric cooker and demonstrator would be taken round from show to show. With these facts in mind, it was particularly gratifying to learn that the Huddersfield Gas Department themselves intended to take a stand, and to do everything possible to make a good show for gas. By making it self-reliant, the treatment meted out to the Gas Industry by the authorities may not be altogether disadvantageous; but judged from the standpoint of fair play, there is little to be said in favour of such an attitude as this. Are the magnitude and public importance of the Gas Industry yet so well known as ought to be the case?

Frank Views on the Electric Grid

WHILE electricity is being sedulously boosted, it may be pardonable to take stock of the present position of this "boon to humanity." A statement has been recently published, and we pass it on as such, "that the productive capacity of the British electrical industry is nearly 50 p.ct. in excess of its output." This, if accurate, is illuminating. Again, the official returns sent to the Electricity Commissioners show that 802 million units of electricity were generated by authorized undertakers in Great Britain during May, compared with the finally revised figure of 832 million units in May, 1930—or a decrease of 3·6 p.ct. During the first five months of 1931 the total amount of electricity generated by authorized undertakers was 4854 million units, compared with the finally revised figure of 4712 million units for the corresponding period of 1930—an increase of 3 p.ct. The last month has witnessed a falling off in consumption.

Then there is the great electric grid scheme. What of this? The Isle of Thanet Electric Supply Company, Ltd., is one of the undertakings which has experienced an agitation for reductions in tariffs, in consequence of the statements made in regard to the grid supply. At least, Mr. J. A. Forde, the Company's Engineer and Manager (in a paper read recently at the congress of the Tramways, Light Railways, and Transport Association), after blaming in the first place the Press, said: "The agitation is also due to the statements made regarding the grid supply, which is to put electricity within the reach of all, with its 'abundant and cheap supply,' at one halfpenny or one penny per unit. When consumers have this fed to them so persistently, one does not wonder at their demands for such 'rare and refreshing fruit.'"

There was a time when Mr. Forde himself had hopes that the grid would prove of benefit, not only to consumers, but also to the distributing company. He now, however, realizes that the chances of either or both benefiting are certainly rather remote. "Assuming," he went on, "we shut-down our generating station and obtain a free bulk supply, and we pass on the amount we would save, by not generating ourselves, to the con-

sumer, he would benefit to the extent of only one halfpenny per unit, that being our cost per unit generated. It is nonsensical to talk of a free bulk supply, and so we shall have to pay something near one halfpenny per unit for this bulk supply. Very clearly the consumer can expect little or no benefit as a result of the grid; it must continue to be a dream in that direction."

This view, which appears to be an eminently reasonable one, should dispel a lot of misapprehension. As Mr. Forde sees things, cheap electricity will mainly depend on the authorized distributors providing sufficient inducements to present and potential consumers, by means of supplies being available in every street (as is the case with gas undertakings), alternative tariffs, financial help by way of hire-purchase, and free or assisted wiring. Such "inducements," however, suggest capital expenditure on a large scale. There is even a possibility, to Mr. Forde's mind, of the position of his undertaking being made worse as a consequence of the electric grid scheme.

"Field's Analysis."

We are able to announce the publication of the 62nd annual copy of the above work, which comprises the accounts of the most important undertakings in the Metropolis and Suburbs of London, together with those of the largest Provincial Companies, and Corporations in England, Scotland, and Ireland. On page 871 a review will be found of the Analysis; and it may not be out of place if we refer once again to the excellent work which Mr. H. E. Ibbs, the Chief Accountant of the Gas Light and Coke Company, and his assistants have contributed towards the production of what must undoubtedly be considered the foremost Analysis of its kind in the Industry.

North of England Auxiliary Meeting.

The necessary holding-over from last week of a portion of the Institution proceedings has brought the present issue of the "JOURNAL" to such dimensions that we are compelled to postpone publication of our report of the meeting of the North of England Gas Managers' Association (Auxiliary Section) on June 13.

Gas at 3¾d. per Therm.

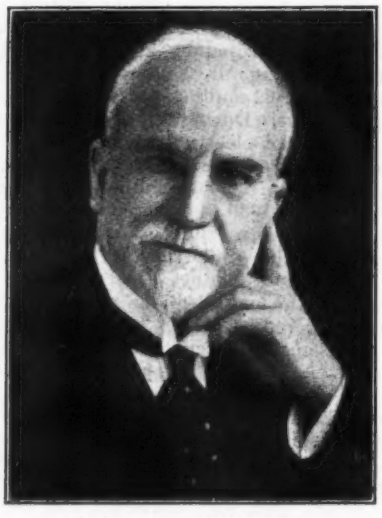
At the present time consumers of the Macclesfield Gas Department are allowed a rebate on their gas accounts for the two summer quarters of 33⅓ p.ct. A reduction in price now inaugurated takes the form of an increase in the rebate to 50 p.ct. The maximum price of gas, therefore, during the summer months will be 7½d. per therm, less 50 p.ct.—*i.e.*, 3¾d. per therm. The Macclesfield Town Council, in adopting the minutes of the Gas Committee on June 3, expressed their appreciation of the signal services rendered by their Engineer and Manager, Mr. H. Curtis, and the members of his staff.

PERSONAL

KNIGHTHOODS FOR TWO MEMBERS OF THE GAS INDUSTRY

The Gas Industry was delighted to find, on the appearance of the King's Birthday Honours List, that the honour of knighthood had been conferred upon two well known and highly esteemed members. We congratulate them on our own behalf and on behalf of the Industry.

Ald. Ferguson Bell was appointed Engineer and Manager to the Derby Gas Light and Coke Company in October, 1900, going to Derby from Stafford. He commenced his professional career at Birkenhead, serving a pupilage under his uncle—the late Mr. W. T. Callow, C.E., who for many years was Chief Gas and Water Engineer there. Mr. Bell passed through various positions at Birkenhead, and later became Assistant Engineer. Since going to Derby he has carried out large extensions at the Litchurch, Cavendish Street, and Belper works of the Derby Company. The gas consumption has more than doubled since his appointment, and the Derby Gas Company have absorbed a number of smaller Companies, including the Belper and Milford Gas-Works, taken over in 1910. He was President of the Institution of Gas Engineers in 1925, and he is also a member of the Institution of Civil Engineers and of the Institution of Mechanical Engineers. In 1904 he was awarded the Silver Medal of the Institution of Gas Engineers for a paper on De Brouwer stoking machinery. He is a Justice of the Peace for Derby, and in 1928 he was elected Mayor of that town. In May, 1930, on the death of his successor to the Mayoralty, he was re-elected to serve again as Mayor for the remainder of the period.



SIR JOHN FERGUSON BELL.

SIR H. WADE DEACON.

The other name appearing in the Honours List, of interest to members of the Gas Industry, is that of H. Wade Deacon, Chairman of the Liverpool Gas Company. He was President of the B.C.G.A. in 1924, occupying the chair during the Association's Annual Conference in Liverpool. He has played an active part in local government and educational affairs, being Chairman of the Lancashire County Council and President of the Council and Pro-Chancellor of the University of Liverpool. He is also a C.B.E. and a Justice of the Peace.

MR. C. P. FINN.

The marriage was solemnized yesterday at St. Joseph's, Wath-upon-Dearne, of Mr. C. P. Finn, M.Sc., F.I.C., M.I.Chem.E., F.Inst.F., and Miss G. E. Eddy, B.Sc.

Mr. Finn is Manager of the Coke Ovens and Bye-Product Plant, Washeries, and Brickworks of the Manvers Main Collieries, Ltd. He is a member of the Mining and Fuel Committee, University of Sheffield, and is actively associated with fuel research work and its direction, as evidenced by membership of the Midland Coke Research Committee, the National Benzole Association Research Committee, the Standardization of Tar Products Tests Committee, the Joint Fuel Committee, the British Engineering Standards Association, &c. Mr. Finn is special lecturer in Coke Oven and Bye-Products Practice at the University of Leeds, member of the Advisory Committee of the Yorkshire Council for Further Education, Past-President of the Coke Oven Managers' Association, and Hon. Editor of the Association's Quarterly Bulletin. He was active for many years in the promotion of extended uses of coke oven gas for town and industrial purposes, and is a member of the Technical Advisory Committee of the South Yorkshire Gas Grid Company.

Miss Eddy gained her scientific training at the University of Sheffield, and specialized in Botany and Geology. For the past five years she has been palæobotanist to the Coal Survey of the Fuel Research Board. She has published original work on the microstructure of coal and the significance of spores in the correlation of coal seams.

The Bolton Town Council have appointed Mr. CECIL H. BAMBER, B.Sc. (Honours), to the position of Assistant Gas Engineer. Mr. Bamber previously held the position of Chief Chemist and Assistant Works Manager to the Bolton Corporation Gas Department. Mr. Bamber is the President of the Manchester and District Junior Gas Association.

Mr. ALAN W. ELLIOTT, of the Shrewsbury Gas Light Company, is shortly leaving to take up an appointment as Assistant Engineer to the Elland-cum-Greetland Gas Company, Yorks, at a salary of £300 per annum. Mr. Elliott was educated at the Priory County School which he left in 1923, and commenced training at the Shrewsbury Gas Light Company, under Mr. C. M. D. Belton. In 1926 he was awarded the National Engineering Certificate for Mechanical Engineering, with distinction in practical mathematics and machine design. He gained the First-Class Certificates of the Institution of Gas Engineers in Gas Engineering, Ordinary Grade (1927), Gas Supply, Ordinary Grade (1928), and Gas Engineering, Higher Grade (1929). In 1929 Mr. Elliott was appointed Chief Mechanical Assistant to the Shrewsbury Gas Light Company.

It will interest our readers who are concerned with recent developments in American gas manufacture and distribution practice to know that Mr. D. M. HENSHAW, of Messrs. W. C. Holmes & Co., Ltd., is sailing on Saturday, June 20, for a business visit to the United States and Canada.

OBITUARY

COL. H. LE ROY-LEWIS.

The funeral of Col. H. Le Roy-Lewis took place at West Meon on Thursday last. Simultaneously a memorial service was held at the Church of St. Botolph, Bishopsgate, among those present being:

The Earl of Dunmore, the Earl of Malmesbury, Lord Wargrave, Lord Jessel, Lord Remnant, Sir George Jessel, Sir Henry Birchenough, Major-General J. E. B. Seely, Mr. R. McKenna, Sir Bernard Greenwell, Sir George Touche, Sir Guy Fleetwood Wilson, Sir James Leigh-Wood, the Hon. Gerard Wallop, the Hon. Robert Remnant, Lady Robson, the Hon. Mrs. John Robson, the Hon. Mrs. Clay, Sir Henry Harris, Sir Egerton Hamond-Graeme, the Hon. Cecil Campbell, Mr. Victor Seely (representing Lady Seely), Miss Seely, Mr. T. B. Barlow (also representing Sir John Barlow), Lt.-Col. Powney, Mr. F. I. Pitman, Mr. F. H. James, Col. Boulton, Major A. G. Saunders, Mr. A. J. Swanson, Mr. Gordon Touche, Mr. D. N. Touche, Mr. Hugh Pettitt, Mr. Sanford Poole, Major J. Gruss-Galieni, Major Albert Pam, Mr. F. Eliot Williams, Mr. Henry F. Tiarks, Mr. A. M. Dunn, K.C., Mr. M. H. Tetley, Mr. H. Ferguson, Capt. W. Harris, Col. B. Abel-Smith, Mr. V. A. Malcolmson, Mr. David Bevan, Major the Hon. George Peel, Mr. Arthur Nops, Mr. W. A. Phillips, Mr. G. C. Lambert, Mr. C. Marais, Mr. Scott Arnott, Mr. R. H. Jessel, Mr. Robert Grant, Mr. E. M. J. Bowler, Mr. Norman S. Smith (representing the "GAS JOURNAL"), Mr. A. W. Bolden, Mr. Arthur G. Hunt, Mr. L. E. Langley, Mr. Lionel Maltby, Mr. Maurice Headlam, Lt.-Col. C. Heseltine, Col. Morton Tomlin, Mr. W. Hill Forster, Mr. M. Denne, Mr. W. Howard-Williams, Col. J. F. N. Baxendale, Mr. P. S. Howard, Mr. W. V. Cooper, Mr. B. P. Lee, Mr. and Mrs. Arnold, Mr. Gilbert Taylor, Mr. W. Liddell, Mr. W. Bennett, Mr. R. J. Hose, Mr. C. F. W. Cup, Capt. China, Mr. F. Kysell, Mr. A. H. Downe, Mr. Bernard Docker, and Mr. W. E. Bowers.

The death occurred, on June 6, of Mr. HAROLD ERNEST RILEY, who for the past 36 years was Engineer, Manager, and Secretary to the St. Austell Gas Company, Ltd., and for many years Consulting Engineer to the St. Blazey, Lostwithiel, and Fowey Gas Companies. The loss of Mr. Riley will be keenly felt in the County of Cornwall.

Mr. R. SEYMOUR TOBEY died suddenly at his residence, The Logans, Horley, Surrey, on Thursday, June 11, aged 54. Only the day before he had attended a Board Meeting of the Horley District Gas Company, of which he was Vice-Chairman. Deceased was, up to 1901, Assistant to his father, Mr. Henry Tobey, J.P., of Malton, Yorkshire. He then came to the Horley Company as Secretary and Manager—a position he held until 1921. In 1922 he joined the Board of Directors, and had been Vice-Chairman since 1929. For some time he was Managing Director of the Whittington Gas Company until it was absorbed by the Chesterfield Corporation Gas Department. The late Mr. Tobey was also an Auditor of the Haywards Heath Gas Company. For some years he was Hon. Secretary of the Southern Association of Gas Engineers and Managers, and he had been a Member of the Institution of Gas Engineers for over twenty years.

CORRESPONDENCE

High-Capacity Meters

SIR,—With reference to Dr. Schütte's statement concerning German high-capacity meters, I am quite confident that I can claim for British manufacturers generally that they are in no way behind other countries in the construction of gas meters.

The use of high-capacity meters in this country is perhaps not as general as abroad, which fact is largely due, I think, to the older conditions existing, and the cost which would be necessary to bring everything up to date. Even if gas undertakings were prepared to enlarge services, it would not be an easy matter to get consumers to re-carcass their property. The old lights type of meter undoubtedly decided the size of services to a large degree, and for that reason the high-capacity meter is not yet the general favourite.

It can safely be assumed that the average size of meter in a normal gas-using house should be capable of registering efficiently at 250 c.ft. with not less than 1-in. inlet-outlet and house service. If this could be arranged, there would be satisfied gas consumers and less changes from gas to electricity. Consumers with a poor gas supply change to electricity because they are not aware that the poorness of the supply is due entirely to insufficient installation. They are wont to consider gas as "out-of-date," and advertise this fact to the detriment of gas.

The size of meter and space occupied should not deter anyone, for the high-capacity meter of to-day is capable of registering large volumes. For this reason I disagree with statement mentioned at the Institution Meeting that a dry meter over 20,000 c.ft. is too costly and too unwieldy. This need not be the case if construction is on modern lines. The "Beamo" meter made by my firm cannot be accused of occupying too much space either for small or for large consumers, and information in regard to the installation of large volume meters will be gladly given to anyone.

J. H. WILSON,
Managing Director.

George Wilson Gas Meters, Ltd.,
Foleshill Road, Coventry,
June 13, 1931.

THE NEWS OF THE WEEK

The Institution of Heating and Ventilating Engineers will hold their summer meeting at Harrogate from June 22-24, under the Presidency of Mr. Sam Fox.

The Bristol City Council have agreed to sell two-thirds of an acre of land to the Bristol Gas Company for £130, and to the reservation of another plot, for the erection of two new gasholders.

The Improvements at the Saltcoats Gas-Works, including extensions to the carbonizing plant, have been completed, and the official opening ceremony is to take place on June 17.

Cookery Demonstrations and an Exhibition are to be held from June 29 to July 3 under the auspices of the Ferndale Gas Company, Ltd., in conjunction with Radiation Ltd., Miss D. J. Baker being the lecturer.

To Popularize The Use of Gas for domestic purposes the Leeds Gas Committee have approved an experimental scheme under which gas fires will be fitted free of charge during the months of June, July, and August.

The Midsomer Norton Gas and Coke Company, Ltd., in competition with the North Somerset Electric Lighting Company, Ltd., have retained the street lighting load of Midsomer Norton for the seasons 1931-32-33-34.

The Verband Schweizerische Gas Werke, which comprises the 81 principal gas-works in Switzerland, sold in 1930 approximately 79,978 million c.ft., or an increase of 211 million c.ft. over the preceding twelve months.

A Children's Co-Partnership Fete was held by the South Metropolitan Gas Company at the Crystal Palace on Saturday, June 13. During the afternoon sports events were held, while there was a wide variety of amusements in the Palace and grounds besides.

The Report of the Societe du Gaz de Paris shows that the sales of gas in the Paris area amounted during last year to 189,768 million c.ft., as compared with 194,533 millions in 1929. On the other hand, the number of consumers increased during the twelve months from 924,464 to 938,169.

The Lewisham Highways Committee have had quotations for lighting High Road, Lee, and part of Eltham Road by gas and electricity, and recommend that the tender of the South Metropolitan Gas Company for gas lighting, at an annual cost of £643 7s. 9d. per annum, be accepted.

Should a Total Breakdown of Plant Occur at the works of the Plymouth Corporation gas undertaking it is stated that the reserves in the gasholder would last only five hours. An official of the Undertaking points out that the new holder now being constructed at Ford will have a capacity of 2 million c.ft., and that when it is completed there will be a reserve supply sufficient for 24 hours.

The Bradford Corporation Health Committee have considered suggestions by the City Architect as to the provision of hot water in each of the 48 single rooms at proposed new dwellings for aged couples on the Bierley Estate as an alternative to a common washhouse, and they recommend the installation of an 8-gallon gas wash-boiler in each of the dwellings at an estimated cost of £318 10s.

In View of Considerably Increased Charges in respect of loans during the ensuing year, and of the general financial position, the Filey Urban District Council Gas Committee have decided to increase the price of gas—as from the next meter reading—from 8·4d. per therm to 9·2d. per therm, with a corresponding increase to prepayment meter consumers, dating from the nearest collection to June 30.

Of the Incorrect Gas Meters discovered in the Bristol district during the Inspector's tests for the past quarter, it was found that more were in favour of the consumers than the sellers. Of the 2922 gas meters tested, 2389 were found to be correct within the provisions of the Gas Regulation Act. Some 192 of the incorrect gas meters favoured the public and 185 were in favour of the Gas Company, while 155 passed gas without registration, and one meter failed to work.

The Manchester District Institution of Gas Engineers will hold their next meeting at Stretford on Friday, July 3, when the works of the President, Col. W. M. Carr, T.D., will be visited. After visiting the works, members will be entertained at luncheon at the Stretford Town Hall, at the invitation of the Chairman and Directors of the Stretford and District Gas Board. The Ordinary General Meeting will be held in the afternoon at which there will be a discussion on "The methods of dilution of straight coal gas."

Institute of Fuel.—We understand that the President of the Institute of Fuel, Sir David Milne-Watson, has taken steps to organize a meeting to be held on Oct. 7 next, in the Lecture Theatre of the Institution of Electrical Engineers, at which he will preside. At this meeting a paper will be presented and opened for discussion, dealing with the basic principles of known coal-oil processes, their present prospects, the lines upon which further investigation may profitably proceed, and the value to the British Isles of the products of the various methods of treatment. It is hoped that this meeting may help to clear the air of some of the exaggerated statements which one hears from time to time, and give the public reliable information and data on a subject of vital interest to our nation.

The Waverley Association of Gas Managers are holding their Annual Meeting in the Goold Hall, St. Andrew Square, Edinburgh, on Friday, June 26, at 10.30 a.m.; when the President, Mr. J. D. Smith, of Belfast, will preside, and will give an address which will be open to discussion. The Meeting will adjourn for luncheon at 1.15 p.m. in the North British Station Hotel, Princes Street. On the afternoon of Thursday, June 25, a Golf Competition will be held over the Baberton Golf Course, Juniper Green, starting at 1.30 p.m. and a Bowling Competition on the Willowbrae Bowling Club's Green, near Piershill Barracks, starting at 1.45 p.m. Prizes will be awarded to the winners of these competitions. All competitors will have High Tea together in Messrs. Ferguson & Forresters, Ltd., 129, Princes Street, Edinburgh, at 6 p.m.

Forthcoming Engagements.

[*Secretaries of Gas and Kindred Organizations are asked to assist in making this diary of events as complete and useful as possible by sending the earliest intimation of all meetings.*]

June 20.—LONDON AND SOUTHERN DISTRICT JUNIORS.—Summer visit to Isle of Thanet Gas Light and Coke Company, Margate.

June 20.—WESTERN JUNIOR ASSOCIATION.—Summer Visit to Exmouth.

June 24.—BRITISH COMMERCIAL GAS ASSOCIATION.—Meeting of Executive Committee at 11.30 a.m.

June 25.—SOCIETY OF BRITISH GAS INDUSTRIES.—Council Meeting.

June 26.—WAVERLEY ASSOCIATION.—Annual Meeting in the Goold Hall, St. Andrew Square, Edinburgh.

June 30.—FEDERATION OF GAS EMPLOYERS.—Annual General Meeting at the Hotel Metropole, W.C. 2, 12.15 p.m.

June 30.—NATIONAL GAS COUNCIL.—Meeting of Central Executive Board, 11 a.m.; Annual General Meeting, 2.15 p.m., at the Hotel Metropole, W.C.2. Inspection of Watson House, 3 p.m.

July 3.—MANCHESTER DISTRICT INSTITUTION.

Sept. 10.—NORTH BRITISH ASSOCIATION OF GAS MANAGERS.—Annual Meeting in Rothesay.

Sept. 16.—BRITISH COMMERCIAL GAS ASSOCIATION.—Meeting of General Committee at 28, Grosvenor Gardens, S.W. 1.

Sept. 28-30.—BRITISH COMMERCIAL GAS ASSOCIATION.—Annual Conference at Exeter.

Oct. 9.—NORTH OF ENGLAND ASSOCIATION.

Oct. 27-28.—INSTITUTION OF GAS ENGINEERS.—Autumnal Research Meeting.

New **Showrooms**, three stories in height with a terra-cotta and bronze frontage, which have been built by Stockton Corporation for their Gas Undertaking, and were designed by Mr. W. W. Atley, Gas Engineer, were formally opened by the Mayor. A comprehensive range of the latest gas heating, lighting, and cooking appliances has been installed, and it is proposed to dress the windows fortnightly and to provide for the public interesting displays of the many uses to which gas can be put. The building is centrally heated by means of a B.T.U. gas-heated boiler which is connected with radiators on each floor.

The Relative Costs of Gas and Electricity were discussed by the Lisburn Board of Guardians at their last meeting. The Ministry of Home Affairs wrote suggesting that in the new home for nurses in connection with the Fever Hospital electricity instead of gas should be used, the Ministry pointing out that the floor below had electricity. It was pointed out, however, that in the country districts they had to put up with lamps, and gas gave the better light. Some members thought electricity cheaper, while one said there was no question of the relative cost of electricity and gas in Lisburn, as gas was the cheaper. On a vote being taken 4 voted for electricity and 9 for gas.

Men of Science from all parts of the world who are interested in the history and evolution of their subjects will be meeting in Congress in London between June 29 and July 4 under the Presidency of Dr. Charles Singer. The Congress is held under the auspices of the Comité International d'Histoire des Sciences, with the collaboration of the Comité International des Sciences Historiques, the Newcomen Society for the Study of the History of Engineering and Technology, and the History of Science Society. Inquiries concerning membership and meetings of the Congress should be addressed to one of the Hon. Secretaries, Mr. H. W. Dickinson, or Mr. Walter Adams, The Science Museum, South Kensington.

The Finance Committee of the Walsall Council have recommended the redemption of an annuity of £1300 which the Gas Department has paid annually to the Birmingham Corporation since 1876 as the price of purchasing a portion of Birmingham's Gas Undertaking when the Borough of Walsall was extended in that year. It is proposed to redeem the annuity by paying Birmingham £23,923 9s. in cash and also surrendering an annuity certificate on which Birmingham has been paying Walsall £259 17s. per annum. Taking into account Walsall's annual payments for the past 55 years the cash payment now proposed, and the approximate capital value of the annuity certificate that it is proposed to surrender to Birmingham, Walsall will have paid over £100,000 for its purchase of a portion of Birmingham's Gas Undertaking in 1876.

In These Days of General Depression, it is interesting to learn of a firm that "held its own" during the year 1930; while 1931 indicates that their record of 1929 will be exceeded. We refer to the 150-year-old firm of Sidney Flavel & Co., Ltd. The death of Alderman Flavel in no way alters the policy of the firm, as the Managing Director, Mr. Percival Flavel, has held the share capital of the business for the last ten years. Recently, he acquired the goodwill, patterns, and stock of the old established grate firm of Robbins & Co., of Dudley, which, together with the patterns of the stove grate section of Flavel's business, will make a range of period designs that is almost unique. Examples of these fireplaces and stoves will be on show at the Flavel Galleries, 38, Welbeck Street, which last year were enlarged and re-decorated. Over 100 models are exhibited on the 5000 sq. ft. of floor space. Plans are being prepared for the enlarging and balancing of the firm's plant to cope with anticipated additional business.

Uniform Quality of Motor Benzole.

The fourth plenary meeting of the International Conference of Benzole Producers took place on Friday, June 12, at the Atlantic Hotel, Hamburg, at which were present delegates from Great Britain and the Continent. The delegates of Great Britain consisted of Sir David Milne-Watson, LL.D., D.L., President of the National Benzole Association, and many Directors of the National Benzole Company, Ltd.

The producers of benzole have made an arrangement to standardize methods of test for all grades of benzole, in order to establish uniformity of quality of motor and industrial benzole by the European benzole producers. This will go a long way towards protecting the users from inferior grades of benzole being placed on the market. Market conditions of motor benzole and petrol were discussed.

THE NEWS—continued.

Safety in Mines Research Board.

Haulage Accidents.

The Safety in Mines Research Board, which is extending the engineering side of its researches, appointed a committee last year to prepare a scheme for investigating possible methods of reducing haulage accidents in coal mines.

The Committee's report, just published by H.M. Stationery Office as S.M.R.B. Paper No. 66 (price 6d.), contains a brief analysis of the incidence of accidents over a number of years and a diagram which brings out strongly the remarkable divergence between districts in the accident rate from haulage operations. Equally remarkable divergence was found to exist between collieries in the same district.

In addition to the statistical information, which has not elsewhere been collected in such small compass, the paper contains proposals for research into various aspects of the haulage accident problem. The matter being one of outstanding interest to mining engineers, the Research Board decided to publish the report for the information of the industry.

The National Gas Council.

District Executive Board, South-Western Area.

The Annual Meeting of the District Executive Board, South-Western Area, of the National Gas Council was held at the Offices of the Exeter Gaslight and Coke Company on Friday, May 29—Mr. R. BRUFORD, J.P., C.A., presiding.

The minutes of the last annual meeting were read and confirmed, the annual report was adopted, and the list of elected members received. The following Officers and Committee were appointed for the ensuing year:

Chairman.—R. Bruford, J.P., C.A. (Taunton).

Vice-Chairman.—P. S. Hoyte, M.Inst.C.E. (Devon Gas Association).

Hon. Secretary.—W. J. Imbrie (Yeovil).

Management Committee.—J. Armstrong (Ilfracombe), F. Blackburn (Devonport), J. B. Cattle (Dartmouth), C. G. Dawson (Torquay and Paignton), W. E. Dean (Exmouth), S. E. Halliwell (Bristol), S. J. Ingram (Truro), J. E. Norman (Weston-super-Mare), W. N. Westlake (Exeter), J. Wesley Whimster (Bath), T. H. Woodcock (Stroud), and one other to be appointed.

Mr. W. N. Westlake, retiring by rotation, was re-elected as one of the four representatives on the Central Executive Board.

Messrs. S. S. Ogilvie and E. J. Fottrell, Joint Managers of the National Gas Council, attended, both addressing the meeting on current matters.

Woodall-Duckham Installations.

The Woodall-Duckham Vertical Retort and Oven Construction Company (1920), Ltd., have received an order from the Wallasey Corporation Gas Department for an installation of sixteen "W.-D." 103-in. continuous vertical retorts capable of carbonizing 155·6 tons of coal a day. This is the third installation of "W.-D." continuous verticals to be erected at Wallasey.

The retorts are to be heated by means of a battery of three producers situated at ground level at one side of the bench. The installation will be erected in an extension of the existing retort house.

A very comprehensive coal and coke handling scheme is included in the contract; it will be capable of handling the coal to, and the coke from, both the new installation and the existing No. 1 installation. The coal-handling plant will include a wagon tippler, a coal breaker, a bucket elevator, and a band conveyor. The coke will be handled separately by a gravity bucket conveyor. Outside coke screening and storage plant is to be supplied. Two horizontal fire-tube induced draught waste-heat boilers are to be installed, each capable of dealing with the waste gases from half of the new installation.

The Compagnie Générale de Construction de Fours have received an order from the Societa Toscana Azien de Gas for an installation of twenty-four 103-in. Woodall-Duckham continuous vertical retorts to be erected at Florence (Italy). The retorts will be heated by a battery of five producers. The installation will be capable of carbonizing 200 tons of coal a day. Two horizontal fire-tube waste-heat boilers are to be provided, one to act as a standby.

The Compagnie Générale de Construction de Fours have

THE NEWS—*continued.*

received an order for an installation of twenty-eight 80-in. "W.-D." continuous verticals to be erected at The Hague. This is the second installation of "W.-D." continuous verticals to be erected at The Hague, and it will be capable of carbonizing 182 tons of coal a day.

On the recommendation of Mr. W. C. Chapman, the Engineer and Manager, the Boston Gas Light and Coke Company have placed with the Woodall-Duckham Company an order for a T.I.C. tar treatment plant capable of dealing with 10 tons of crude tar per 24 hours. This plant will be used for the production of road tars.

British Tar at a Highland Show.

In order that the advantages of road tar should be more widely known in Scotland, the British Road Tar Association are exhibiting at the Highland Show, Edinburgh, from June 23 to 26.

The stand is designed in a manner that permits visitors to familiarize themselves immediately with the merits of tar for the construction of roads, for the base of the stand is composed of various types of tarred materials, and visitors will have every opportunity of examining them. Here will be found examples of durable and safe tar roads, which constitute the greater mileage of our highways throughout the country.

Tarred surfaces are becoming increasingly recognized as being by far the safest for all classes of traffic. In addition, the non-skid properties conferred by the use of tar on existing smooth road surfaces are now universally admitted.

German Long-Distance Gas Developments.

Stockholders of the Ruhr Gas Company, which operates the largest system of long-distance gas supply in Germany, have voted an increase in the share capital by RM.2,000,000 (say, £100,000) to RM.27,000,000 (say, £1,350,000), for the purpose of financing further extensions to the system, states a Berlin message. The shares will be issued at par to present holders.

The Ruhr Gas Company, which was formed in 1928 by the German Steel Trust and other leading coal producers with the object of turning the waste coke-oven gas of the Ruhr to commercial use, was financed in the early stages of its activities by the Dillon Read banking interests of New York. Its operations have not as yet shown a profit, owing to the preliminary period of construction not having been fully completed. During the past year, 175 miles of new pipe lines were added to the system, making a total network of 575 miles, and further additions are in progress.

According to an official statement at the annual meeting, results in the current year are satisfactory, and the figure of 950 million cub.m. previously estimated for sales of gas this year is expected to be reached. This would compare with sales of 710 million cub.m. last year and of 405 million cub.m. in 1929. Within the next few years, it is stated, the supply of the City of Cologne with Ruhr gas will be inaugurated.

Co-Partners' Wives Visit Hastings Company's Works.

The women's section of the Hastings and St. Leonards Gas Company's Co-partners' Social Club recently visited the Works at Glyne Gap for the purpose of having explained to them how gas is made.

The Chairman of the Company, Mr. A. M. Apel, and Mrs. Apel accompanied the party, which numbered about one hundred, and was shown round by Mr. Charles F. Botley, M.Inst.C.E. (Engineer and General Manager), and the Works Manager, Mr. A. L. Broadberry, Assoc.M.Inst.Gas E.

The many processes through which the raw material passes were seen in operation culminating in the final principal products of gas and coke. Opportunity was taken to emphasize the clean and ready forms of light, heat, and power, which emanated from the Works. After tea, a vote of thanks to the Company proposed by Mrs. Broadberry as Chairman of the women's section was heartily accorded.

Mr. Botley, in the course of his response, said it was the first time that the Works had been invaded by such a large number of ladies, but he felt safe in saying that it was a peaceful invasion and one which had done good to all concerned. It was not true to say that gas was out of date. Gas sales were going up year by year as more and more people realized the advantages of an efficient and reliable source of gas supply for all purposes. Appliances had been improved and were still improving, and the modern housewife might find ready to her hand all that she needed to lighten the labour of her domestic duties. The Company's works had recently had extensions made to them, and most modern machinery had been installed.

The Chairman of the Company also addressed the gathering, expressing the pleasure of the Directors at seeing so many of the employees' wives there; remarking that it was an excellent idea that they should visit the works to see the actual work their husbands were engaged in.

Resumption of Halifax Street Lighting.

The suspension of street lighting at Halifax for some weeks during the summer season—a suspension decided upon by the Gas Committee as the only way to effect economies demanded by the Finance Committee—has unfortunately coincided with a prolonged spell of bad weather with nights darker than they should be at this time of the year. The result is that the Corporation have received letters of complaint from the Halifax and District Property Owners' and Ratepayers' Association and the local Amusement Caterers' Association. The former consider the lighting curtailment "ridiculous" and the latter say it is keeping hundreds of people away from the town's entertainment houses owing to nervousness as to getting home. It is understood that the Corporation's efforts to economize are largely the result of clamour by organizations such as these.

At any rate, the suspension resulted in such a storm of protest that the Watch Committee held a special meeting at which they decided upon an immediate renewal of limited street lighting and a speedy resumption (subject to approval of the Town Council—which can hardly be in question in the circumstances) of the normal summertime street lighting.

A.G.A. Production and Chemical Conference.

The Fifth Annual Joint Production and Chemical Conference of the American Gas Association was held in Philadelphia on May 20, 21, and 22, 1931. The Conference was attended by about 300 representative production and chemical men of the Gas Industry.

It is customary at these meetings to make no published report of the transactions. The papers are printed and sent to leading men or to anyone who requests them, in advance of the meeting, the object being to have a full and unhampered discussion by the members present, particularly the younger men. In the five years of these conferences this has worked out quite satisfactorily.

A departure from the previous programmes was made this year in that on May 21 there was no meeting in the afternoon, one being scheduled for 8 p.m. instead. This made daylight hours available for inspection trips to various local plants. This proved such an interesting feature of the conference that it will probably be repeated in the future; for in spite of the fact that it was rainy at the time scheduled for the departure of the buses for the various plants, 118 men reported for the trips.

The Carbonization Committee had a session devoted exclusively to bye-products, and the Water Gas Committee one almost exclusively to the use of bunker oil for carburetting, both of which were exceedingly interesting, and the papers were well discussed.

The most interesting session was the last one of the Conference, which was a symposium on handling, mixing, and control of purchased gas. The Gas Industry in America is becoming confronted more and more with the problems of advantageously using gas near at hand made as a bye-product of some other process. There is coke oven gas from steel mills, which at this time has been fairly well absorbed by the Gas Industry; refinery oil gas which is becoming more prominent as higher pressures in the cracking stills are employed, which yield a larger gasoline return to the refiner, but at the same time produce more high B.Th.U. gas for which he has no use other than for fuel under his stills; and the greatest in quantity of all of these gases is natural gas, which is being discovered in ever increasing quantities and must find a market in some gas territory.

The discussion at this session was very interesting, particularly as Chicago expects to start distributing an 800 B.Th.U gas in the autumn, to be a mixture of natural and manufactured gas. The natural gas will be supplied by a 24-in. line one thousand miles long from the gas wells in Texas and will have a capacity of 175 million c.ft. per day.

"Field's Analysis," 1930

We are able to announce that "Field's Analysis" of the accounts of representative Gas Undertakings in the British Isles for the Year 1930 will now shortly be released for publication, and we have been furnished with an advance copy.

With such an important and varied mass of detail it is difficult to extract any one particular item as possessing an outstanding interest over that of its fellows; but as the success of the Industry must inevitably be associated with its progress in the matter of output, we naturally turn first of all in the direction which will furnish us with the required information.

Having done so, we find that the sale of gas by undertakings comprised in the Analysis amounted for the year to over 822 million therms, or about the same as the previous year. The result was not the same, however, in every case, the Metropolitan Companies suffering a decrease in consumption of 2·34 p.ct., the Provincial Companies 0·64 p.ct., while the remaining groups were better by small margins, leaving the gross output of all the undertakings substantially unchanged. In this connection it may be recalled that the temperature during the early part of last year was notably higher than the corresponding period of the previous year, and the effect of this can be quite marked when occurring, as in this case, at the time of the year when the level of output is at its highest.

As weather conditions play such an important part in the output of gas, it is sometimes misleading to consider the figures for any one year as compared with its predecessor. Therefore the following extract has been made of the figures of the undertakings dealt with in the Analysis for a period covering the 20 years from 1910, so that a truer picture of the progress made may be obtained.

—	Gas Made.	Increase P.Ct. over Previous Five Years.
	1000 C.Ft.	
1910	97,629,600	..
1915	111,964,389	14·68
1920	128,611,543	14·87
1925	145,296,096	12·97
1930	157,343,075	8·29

1930 over 1910, increase p.ct., 61·16

It will also be interesting to compare some of the working results for the same period, and for this purpose the following table of percentages has been compiled.

—	Percentage of Total Cost.			
	1915.	1920.	1925.	1930.
Metropolitan—				
Manufacturing cost	48	57	53	47
Distribution (*less* rentals)	5	15	12	14
Overhead, &c.	18	15	16	18
Capital charges	29	13	19	21
Suburban—				
Manufacturing cost	52	70	61	52
Distribution (*less* rentals)	6	10	7	10
Overhead, &c.	18	11	15	18
Capital charges	24	9	17	20
Provincial—				
Manufacturing cost	55	68	56	47
Distribution (*less* rentals)	5	9	11	12
Overhead, &c.	14	12	15	20
Capital charges	26	11	18	21
Corporations—				
Manufacturing cost	47	57	46	39
Distribution (*less* rentals)	11	12	17	18
Overhead, &c.	16	16	18	24
Capital charges	14	7	10	10
Relief of rates	12	8	9	9

It is always interesting to relate movements in the volume of gas sold to the number of consumers, for by this means we are able to test the important question as to whether the consumption of gas is becoming more intensive or merely more extensive. In the following table are given the increase or decrease per cent. in the number of consumers compared with the previous year, together with the rate of change in the average consumption per head and in the total sale of gas.

Although allowance must be made, as in this case, for temporary influences affecting the sale of gas for a particular year, these figures tend to confirm the view that an increase in the consumption of gas depends on an increase

—	Number of Consumers.			Average Consumption.	Gas Sold.
	Ordinary.	Automatic.	Total.	Therms.	P.Ct.
Metropolitan Companies	Inc. 3·78	Inc. 3·20	Inc. 3·42	Dec. 11·38	Dec. 2·34
Suburban Companies	Inc. 11·42	Inc. 8·53	Inc. 9·99	Dec. 10·17	Inc. 0·24
Provincial Companies	Dec. 4·66	Inc. 7·89	Inc. 1·05	Dec. 3·05	Dec. 0·64
Provincial Corporations	Dec. 0·27	Inc. 7·80	Inc. 3·53	Dec. 5·02	Inc. 0·34

in the number of metered supplies rather than upon an increased use of existing supplies. This is further borne out by the figures appearing below, from which it may be seen that the average consumption per consumer during the past 5 years has failed to keep pace with the increase in gas sold over that period as shown in the table given at the end of the Analysis.

Average Consumption per Consumer (Therms).

—	Metropolitan Companies.	Suburban Companies.	Provincial Companies.	Provincial Corporations.
1926	193·40	173·45	175·64	160·70
1927	192·76	172·23	172·11	164·49
1928	189·50	169·99	165·89	154·65
1929	194·21	170·77	167·60	151·82
1930	182·83	160·60	164·55	146·80

It will be seen from the Analysis that in the Metropolitan and Suburban areas there is a fairly general increase in the number of consumers, both ordinary and automatic, but that in the Provinces there is a falling away in the former, but a considerable increase in the latter. Automatic consumers as a class are far more uniform than ordinary consumers, and this increase is very satisfactory as indicating that the Industry has by no means reached saturation point in the direction in which it might reasonably have been expected.

Gas for public lighting continues to maintain its ground, despite severe competition, the number of lamps (361,301) having increased by 1·7 p.ct. and the gas consumption by 4 p.ct.

Turning to the more technical aspects of the year's workings, it will be seen that the proportion of water gas has been further reduced on the whole, but this is attributable more to the policy of particular undertakings than to a general tendency. What is of far more interest, however, is the development of the purchase of gas in bulk by certain of the provincial undertakings. This new departure has now assumed quite large proportions in some cases, the Sheffield Company having purchased 91 p.ct. of its supply, Newcastle 43 p.ct., Leeds 13 p.ct., and Glasgow 8 p.ct. It is perhaps a little premature to attempt to assess the financial advantages of this policy, but it is a point that will be watched with very great interest. At the present moment it would appear that the full advantages have not yet revealed themselves in the accounts of the undertakings concerned, for the expenditure under the headings "Net Coal" and "Total Manufactory Charges" does not yet show any appreciable reduction that could be attributed to the change of practice. The purchase of gas by the South Suburban Company from another gas undertaking (viz., the South Metropolitan) is, of course, in a somewhat different category.

A study of the technical results for the year shows that the calorific value of coal gas was maintained at much about the previous year's level, but that an increase in the volumetric yield has produced an improvement in the make of therms per ton in the case of the Metropolitan, Suburban, and Provincial Companies. This improvement is not so noticeable in the case of the corporation undertakings, among which the general practice is the production of a large yield per ton of coal of gas of lower calorific value.

We turn now to a consideration of the Revenue Accounts for the year. The average prices charged for gas as given in the column headed "Net Gas Rental" show practically no change from the previous year, and the same may be said of the total income from gas.

The total revenue derived from residuals also remains substantially the same as last year, lower prices for tar and ammonia products being offset by an appreciable increase in the net price of coke. The unsatisfactory position of the

ammonia account is now being revealed in actual losses or in greatly reduced credits by almost all concerns.

Turning to the expenditure side of the Revenue Account we find "Total Working Expenses" substantially the same as for the previous year, slight reductions being found here and there, particularly perhaps among the manufactory charges. With no violent changes on either side of the Revenue Account, gross profit, and net profit too, remain steady.

The year thus passed unmarked by any outstanding financial feature. This, however, by no means spells inactivity within the Industry, for many interesting developments are proceeding, some quite novel, others carrying existing achievements a step further—viz., the purchase of coke oven gas, the extension of the basic price system, and the conversion of the remaining undertakings to a thermal method of charge. The annual issue of the Analysis, with its liberality of detail and wealth of statistical data, enables the progress of the Industry to be closely watched; and no responsible gas official can afford to be without a copy of this valuable work. Of particular interest are the tables given at the back of the volume showing a comparison over a period of 5 years of some of the principal items in the Analysis, from which it is possible to obtain a reliable view of the course of events under normal conditions.

The Analysis has again been compiled by Mr. H. E. Ibbs, Chief Accountant of the Gas Light and Coke Company, and bears the hall-mark of efficiency to which we are so well accustomed; and a word of praise in this direction must also be given to his able staff of assistants.

The price of the Analysis is £2 2s.—and the volume may be obtained from the publishers, Messrs. Eden Fisher & Co., Ltd., 6, 7, and 8, Clements Lane, E.C. 4.

CONGRESS OF THE FRENCH GAS INDUSTRY

The Annual Congress of the Association Technique de l'Industrie du Gaz en France took place from April 21 to 25 in Algiers. Summaries of some of the papers presented are given here

(*Concluded from page* 832.)

A NEW THERMOSTAT.

M. V. Polinelly described the S.D.F. thermostat. This consists of a vertical tube having its lower end communicating with a deformable metal organ situated in the inlet of the burner and its upper end closed with a screwed plug. The tube is filled with an appropriate liquid (generally water) to a suitable height. The essential feature of the device, which does not include any system of levers, is that, for all temperatures in the working range of the thermostat, the vapour tension of the liquid is below atmospheric pressure. Rise of temperature causes the organ to expand, whereby its end approaches a nozzle in the burner, and the flow of gas is reduced. The thermostat is prepared for use by heating the tube, the plug being removed, until the water nearly reaches boiling point and then screwing down the plug. On cooling a vacuum is produced.

The nozzle in the burner is threaded externally with a thread of $\frac{1}{25}$ in. pitch. Its position can thus be altered so that adjustment of the working temperature can be effected. The travel of the end of the organ is 0·16 in. for a temperature charge of 72° Fahr. Hence one-tenth turn of the nozzle alters the working temperature by 1·8° Fahr.

An advantage of this thermostat is that overheating of the medium under control cannot occur since if any leak develops owing to faulty material, the vacuum is destroyed and the burner is extinguished.

An analogous arrangement is employed in the Torrivius water-heater, a vertical cylindrical vessel with a central flue, at the bottom of which is the burner. The thermostat is made in the form of an annulus in the water space closely surrounding the flue.

INVESTIGATION OF RUBBER JOINTING MATERIALS.

M. A. Mailhe described the results of the examination of a large number of samples of rubber jointing materials from the point of view of their use in gas mains. The action of benzolized gas and of a synthetic gas-main condensate on the samples was investigated, and complete chemical analyses of the specimens were made. Samples of rubber which had been long in use were also analyzed. It was found that the most satisfactory products were those having a low content of highly vulcanized rubber and a heavy loading of mineral matter and carbon black.

USE OF PNEUMATIC DRILLS IN THE DETECTION OF GAS LEAKAGES.

M. G. Davoust described the application of pneumatic drills for making bore-holes in roadways for the detection of leakages by use of the gold-palladium method. The use of pneumatic drills offers many advantages as regards speed and cost over manual excavation. Details were given of the necessary equipment and of working costs.

USE OF BREEZE IN PRODUCERS.

M. J. Kuentz gave an account of the successful use of breeze in the producers of the Woodall-Duckham vertical retorts at Rennes. The use of breeze was adopted with a view to economy in the cost of underfiring.

Due to the resistance which breeze offers to the entry of the primary air, air was supplied to the producers under pressure by the agency of a steam injector of simple type. A damper in the air inlet-pipe permitted regulation of the quantity of air admitted and was connected by way of a wire, pulley, and counterpoise to the door of the producer, so that the air might be shut off automatically when the door was opened and no inconvenience should be experienced during clinkering which was carried out every 12 hours. To facilitate clinkering, it is necessary that the bars of the grate should be in good condition and that they should slope slightly towards the interior of the producer to prevent the breeze from falling out. In place of the false bars previously employed when coke was used, and which have a spacing too wide for use with breeze, the stoker employs a large fork for clinkering. No dust was carried forward with the producer gas which was of satisfactory quality. Breeze has been employed in three of the five settings for twelve months.

AVOIDANCE OF CLINKER TROUBLES IN PRODUCERS—STEAM VERSUS WASTE-GAS INJECTION.

M. J. Comon dealt with the subject of clinker formation in Siemens producers. In producer practice, clinker formation is minimized by arranging for an endothermic reaction to occur in the producers whereby the development of excessive temperatures is avoided. Normally, steam is used for this purpose, but waste gas may also be used. The carbon dioxide present in the waste gas reacts with the coke endothermically with formation of carbon monoxide. In connection with an installation of inclined chamber ovens, a blower was arranged to draw waste gas from the flues together with air from atmosphere (to provide a cooler product) and to deliver the mixture to the producers. Particulars are as under:

—	CO_2.	O_2.	N_2.	H_2O.	Temp. Fahr.	C.Ft. (30 in., 60° Fahr. Satd.) per Ton of Coke Charged.
Waste gas before dilution with air	10·9	7·7	72·3	9·1	752	..
Waste gas after dilution with air	6·2	13·2	75·0	5·6	356*	177,000

* At inlet to producers.

The coke employed contained 12 p.ct. moisture and, on the dry basis, 1·5 p.ct. volatile matter and 12·5 p.ct. ash (softening point approximately 2000° Fahr.).

Due to injection of waste gas and the consequent cooling of the grates, and reduction in formation of clinker, clinkering was easier and quicker by one-third. The content of combustible matter in the pan ash was reduced from 48 p.ct. to 35 p.ct., and the interval between periods of cleaning out the producers was raised from 8 to 14 days. This,

too, involves a saving of coke. The degree of uniformity of composition of the producer gas was satisfactory. Comparative results were as follows:

—	No Injection.	Injection of Steam.	Injection of Waste Gas.
Producer gas composition half-way between clinkering periods—			
CO_2	6·5 } 31	10·0 } 30·5	9 } 31
CO	24·5 }	20·5 }	22 }
H_2	8·5	12·5	5·5
N_2	60·5	57·0	63·5
Water vapour present, vols. per 100 vols. of dry gas	9	16	6
Grading of the clinker (round holes)—			
Larger than 2½ in., p.ct.	54	30	18
2½ in.—⅛ in., p.ct.	23	32	34
⅛ in.—o in., p.ct.	23	38	48
Thermal balance—			
Efficiency, p.ct.	81·3	86·5	87·7
Heat content of combustible matter in ashes, p.ct.	13·9	8·0	7·8
Radiation, sensible heat of ashes, &c., p.ct.	4·8	5·5	4·5
Gaseous B.Th.U. obtained per lb. atom of carbon gasified	165,400	170,100	173,300
Economic balance (24 hours)—			
(A) Coke charged to producers, tons	63·0	59·1	59·1
(B) Coke recovered from ashes (by washing), tons	5·9	3·0	3·0
(C) Steam consumed, tons	..	19·7	..
(D) Power consumed, KW.-H.	..	..	240
(E) Labour, men	13	9½	9½
Savings per day	..	29s.	67s. 9d.

(A) 16s. 1d. per ton, (B) 12s. 1d. per ton, (C) 2s. 5d. per ton, (D) 0·48d. per KW.-H., (E) 12s. 11d. per man per day, including general charges.

The producer gas obtained when waste gas injection is practised has a lower calorific value than has the producer gas normally used in the heating of settings, but it was nevertheless possible to develop by its combustion a temperature sufficiently high to enable carbonization to be effected in 24 hours.

INVESTIGATION OF GAS BURNERS.

M. E. Biard described an investigation of the factors underlying the functioning of gas burners. The influence of the diameter of the jet and the area of the air inlet holes on the ratio of primary air to gas was studied, and experiments were carried out on the velocity of the mixture at the burner outlet required to prevent back-firing under different conditions of aeration.

REPORTS OF COMMITTEES—TAR, BENZOLE, AND BYE-PRODUCTS.

A questionnaire was addressed to gas-works with a view to ascertaining the types of plant in use for tar dehydration and distillation and the working results. But few of the works furnished particulars, though a number replied that the question of installing tar plant was under consideration. In view of this, the report presents a description of a variety of forms of tar treatment plant. The plants covered are those about which particulars were furnished by the works employing them, and, in addition, a description is given of various other systems of tar treatment. As regards dehydration, illustrated descriptions are given of the Mallet thermosyphon, the Mallet column dehydrator, the Égrot and Grangé process, and a circulating process. The plants described for road tar preparation or tar distillation are the Cabrier, Guillet, Sulzer, T.I.C., Wilton, Ab-der-Halden, and Cascade systems.

NOTES ON NEW BOOKS

MOTOR BENZOLE. ITS PRODUCTION AND USE.*

Reviewed by E. W. Muddiman, B.Sc., F.I.C.

English technical literature is not particularly rich in books dealing with the recovery and uses of benzole, although in the last few years the Annual Reports of the Joint Benzole Research Committee have done much to add to our knowledge of the scientific side of the benzole industry. With the recent publication, however, by the National Benzole Association of "Motor Benzole. Its Production and Use," written by their Research Chemists, W. H. Hoffert and G. Claxton, we can now claim to have the best text-book on the subject which has yet appeared in any country.

There is a foreword by Sir David Milne-Watson, LL.D., D.L., who is President of the National Benzole Association, in which he remarks that as Faraday was the discoverer of benzole, it is a happy coincidence that the book appears during the year in which celebrations in his honour are taking place.

After a short historical introduction, the authors discuss the various sources, actual, possible, and potential, of the aromatic hydrocarbons, and compare the qualities of the liquid fuels obtainable therefrom. The latest returns of consumption and production of benzole throughout the world are included, and make interesting reading. In our total production of benzole we are far behind the U.S.A. (140 million gallons) and Germany (92 millions). It is estimated that if the gas-works in this country carbonizing over 20,000 tons of coal per annum recovered benzole at two-thirds the average efficiency attained at coke ovens—a recovery that is easily reached without appreciably affecting the quality of the gas—the total production of refined motor benzole would be increased from 38 million gallons to about 58 million gallons. This may appear to be a large increase, yet we make motor benzole, mainly from coke oven gas, to the extent of only 3 p.ct. of our annual consumption of motor fuel.

The effects of benzole recovery on the gas, and the economics of benzole recovery are treated very fully, since these are of primary importance to the gas engineer. The removal of the benzole from a normal coal gas results in a reduction in the calorific value of the gas, a slight reduction in flame size and in the rate of flame propagation, and a negligible change in flame temperature. Beyond having to supply a slightly greater volume of gas to compensate for the reduction in calorific value, the removal of benzole will have no effect upon the efficiency with which the gas can be utilized in heating appliances and in incandescent lighting burners. There is no doubt that at the present time the financial returns resulting from the adoption of benzole recovery on those gas-works where carbonizing conditions permit of a reasonable quality of product are definitely in its favour.

In view of the high standard of their laboratory researches during the past few years on the absorption of benzene by various media, it is only reasonable that the authors should include many of their results in the chapter on the theory of benzole recovery. The possibilities of various methods of removal of benzole, by cooling, compression, absorption, and adsorption are discussed, and the theory underlying each method is given in detail, particularly in the case of liquid absorbents. Many useful figures regarding absorptive capacities of various oils suitable for benzole recovery are appended. The changes in absorptive capacity with temperature and with continued use receive due consideration, and in this connection one could wish for more practical information on the subject of sludging of wash-oils. Anyone who is in charge of wash-oil stripping plant knows how troublesome the deposition of sludge in preheaters, wash-oil tanks, and stills can become, especially when gas-oil is used. The recent promising results of sludge removal by centrifuging of the wash-oil at the Derwenthaugh Coke Works of the Consett Iron Company are worthy of serious study.

A brief description of the treatment of the gas prior to benzole extraction precedes the section of the book dealing with the design and operation of benzole recovery plant, the treatment of which is very complete. Practically every form of scrubber and washer is illustrated and its working explained, and the various types of heat exchangers, preheaters, stripping stills, and accessory apparatus are described, together with operation and constructional details. This chapter, and the following one on adsorption processes for benzole recovery, are one of the features of the book. The two main theories of adsorption are given, and an account of the more important results obtained by the authors and by E. C. Williams, the first Research Chemist to the Joint Benzole Research Committee, on the compara-

* By W. H. Hoffert, M.A., B.Sc. (Oxon), F.I.C., and G. Claxton, M.Sc. (Leeds), Research Chemists to the National Benzole Association. Published by the National Benzole Association, Wellington House, Buckingham Gate, S.W. 1; 25s.

tive efficiencies of silica gel, active carbon, and ferric oxide gel for the extraction of benzene from gaseous mixtures. A short summary of the methods of manufacture of adsorbents is followed by descriptions of silica gel and active carbon plants operating under recovery conditions. The pioneer work in this country of the Gas Light and Coke Company with active carbon receives due prominence, and the data obtained on the 2 million c.ft. per day plant at the South Harrow Gas-Works are reproduced. The working results from the 75 million c.ft. per day active carbon plant now being installed will be awaited with interest. The use of silica gel for benzole recovery has not advanced since 1924, and this adsorbent is much less promising than active carbon under the conditions which obtain in the extraction of benzole from coal gas.

Comparisons of the benzole obtained by the active carbon process with that recovered by oil washing show a higher proportion of benzene in the former, which costs less to refine, although it contains a fairly high proportion of unsaturated hydrocarbons. One disadvantage of the adsorption method of recovery is that its success depends to a large extent on the removal of naphthalene from the gas. Since this can be accomplished economically only by means of an oil washer, the advantages of an active carbon plant are largely discounted owing to the ease with which benzole recovery can be combined with the removal of naphthalene in a single washer.

On the subject of the refining of benzole for use as a motor fuel the authors are on familiar ground, and they cover it very fully. They describe the usual processes and plant in everyday use for the distillation, washing, and rectification of the light aromatic hydrocarbons, and discuss various methods of refining other than that using sulphuric acid. The Instill process, which has possibilities, is among those considered. Although it produces a benzole which does not pass the acid wash test of the N.B.A. specification, the unsaturated hydrocarbons are retained, and the washing loss is much less than is the case when acid is used. The outcome of the Benzole Conference this month at Hamburg, when the Instill process will be considered, may have some bearing on the future standard of motor benzole made in this country.

With regard to the prevention of resinification of benzoles without the removal of the unsaturateds, the authors give details of their scheme for stabilizing such motor fuels by the addition of 0·03 p.ct. by weight of tricresol, which was tried out by the Gas Light and Coke Company in 1929 and was found satisfactory. It would be interesting to know what the future policy of the N.B.A. will be in this matter.

It would be difficult to improve on the section of the book dealing with the physical and chemical properties of benzole. All the relevant data on such varied properties as viscosity, freezing points, vapour pressures of various alcohol, petrol and benzene mixtures, flash and ignition points, latent and specific heats, thermal conductivity, and water solubility are collected together, with calculations for theoretical air requirements, calorific values, and explosive range of explosive mixtures. An account of the principles of the internal combustion engine is followed by a very readable chapter on the theories of detonation and the "knock" evaluation of motor fuels by the Ricardo variable compression engine and by the bouncing-pin method of Midgley and Boyd. The modern requirements in a good motor spirit for high power output, ease of starting and acceleration, economy in use, and freedom from deleterious effects on the engine are examined in turn, and their importance assessed with special reference to benzole, the whole being discussed very impartially.

Two chapters are included on the storage and handling of benzole, and the blending of benzole motor fuels. Under these headings information is given on fire risks and precautions, fire-fighting appliances, benzene poisoning, conveyance of benzole and equipment of depôts and mixing stations, and distribution of benzole to customers. The results of blending benzole with petrol and alcohol are shown by a number of tables and graphs.

Nearly a hundred pages are devoted to the tests and methods of analysis used in connection with the recovery and use of benzole. Most of these tests are taken from the "Standard Methods for Testing Tar and its Products," issued at the end of 1929, but a number of methods, such as those for the determination of benzole in gas using wash-oil or active carbon, and for the measurement of absorptive capacity of a wash-oil, are based on the experience of the authors.

In the lengthy appendix are many useful physical tables and practical data likely to be of service on benzole plant.

To criticize the book is to praise it. Any information likely to be of service where benzole recovery is concerned has been included and brought into its correct perspective. It is written in a clear and logical style, and is copiously illustrated with diagrams of processes and photographs of plant. It is obvious that no effort has been spared to consult original papers, and very full references are given, many of them of this year's date. For a first edition, the book is remarkably free from errors; there are only some half dozen throughout, and these are mainly due to the printer. Even though we are living in times of change and progress, the book will undoubtedly remain for many years the standard work on benzole and its production.

CHEMICAL ENGINEERS AND GAS ENGINEERS.*

Although the old adage says that a rose by any other name would smell as sweet, yet we like to be precise in our definitions. When we come to define a specialized profession such as that of a chemical engineer or a gas engineer, we experience difficulties. In recent years, since the formation of the parent Institution, the definition of a chemical engineer has formed the subject of conference, committee, and even after-dinner speeches. As the result of much thought the Council of the Institution of Chemical Engineers have defined a chemical engineer as a "professional man experienced in the design, construction, and operation of plant and works in which matter undergoes a change of state and composition." This rather brings into prominence the difficulty of precise definition, for would it be possible to find a more true definition of a thoroughly competent gas engineer than the above? The first President of the Institution of Chemical Engineers, himself a distinguished gas engineer, drew attention to the breadth of knowledge required by an efficient gas engineer. He should have some knowledge of civil and mechanical engineering, be able to understand the chemical principles underlying the gas-making processes, and have a close knowledge of refractories, and the performance of metals under varying conditions. In other words, according to the above definition, he must be a chemical engineer who has specialized in the Gas Industry.

The peculiarly practical nature of chemical engineering training has been forced upon us by the study of an excellent book entitled "Elements of Chemical Engineering," which in a particularly lucid fashion leads us through the groundwork of the subject. To review with any adequacy such a book is a difficult matter, but let us follow the theme of the close kinship between the chemical engineer and the gas engineer by itemizing sections of this book which are of vital interest to the latter. In Chapter 2 we have a section dealing with gas measurement. Chapter 3 deals with the transport of fluids, including pipe fitting, types of pumps, correct materials of construction, correct type of pumps for various duties, and so on. The fourth chapter deals with heat flow, from which can be gained information of the interface temperature between refractory brick and common brick, or the correct design of a heat interchanger. In the following three chapters can be found an answer to such questions as the relative merits of continuous and batch evaporation, the principles governing natural draught cooling towers, and a full description of different types of driers. Following a section on distillation very full attention is given to the subject of gas absorption. The information is practical, including such items as the characteristics of various tower packings, and methods of tower construction. Chapter 15 is devoted to the subject of crushing and grinding, fourteen kinds of machine being described and illustrated, apart from adequate discussion of the theory. Chapter 16 deals with size separation. The concluding chapter discusses in great detail the principles of conveying and weighing, including such matters as methods of driving belt conveyors, capacities of various sized belts, power requirements of screw conveyors, and so on.

This rapid scanning of the pages shows that in every chapter there is matter of interest to the gas engineer, and would seem to point to the fact that the elements of chemical engineering should come within the purview of every gas engineer. To gain this knowledge, "Elements of Chemical Engineering" is particularly suitable.

A feature which demands special mention is the quality of the illustrations, which have been specially drawn, and which, while retaining essential detail, have a boldness of line which makes for clear reading.

* "Elements of Chemical Engineering," by Walter L. Badger and Warren L. McCabe, with an introduction by Arthur D. Little. Chemical Engineering Series, published by McGraw-Hill Publishing Company, 1931. Price 25s.; pp. 625, with 314 figures.

ST. MUNGO SEES IT THROUGH

Contemplation at the Kelvin Hall, Glasgow

A tall flambeau, with fingers of flame darting ceaselessly upwards, burned steadily in Kelvin Hall from May 29 to June 13. It was a symbol of service. A flambeau suggests a temple, and, indeed, this flambeau cast its flickering shadows across the entrance to a veritable temple.

A temple suggests believers. Well, there are seven millions of them, and of one sex alone, in Britain, yet the creed to which they swear allegiance does not bask in the radiance of popular appreciation, which it merits.

Yes, seven million housewives in Britain believe in gas, as applied to the domestic science and art of Mrs. Beeton, yet their total reliance and dependence on the gas tap are as definite as their cognition of what that service means is wrapt in a mist of indifference and unconcern. To the majority, the gas comes from the gas-works—and " that's that "!

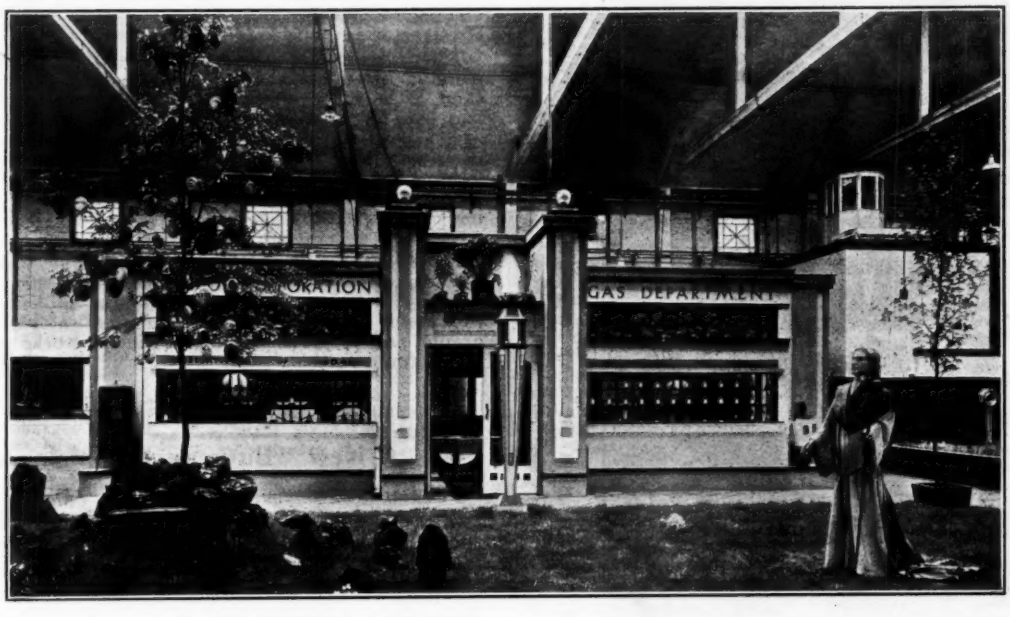
It is just to this particular quota of the seven millions who claim Glasgow as their home, and, to their men folk too, that the flambeau should have acted as beacon—a guide to the Temple of Gas Knowledge.

Civic Service.

There was an endless pilgrimage to this corner of the vast parterre at Kelvin Hall during the run of the Civic and Empire Exhibition. It was a brave effort by the Glasgow Corporation Gas Department to demonstrate the spirit of civic service and enterprise, as related to the particular activities of its branch of municipal trading. A truly pastoral scene was conceived. A green turfed square; a noble tree—a few yards away, the figure of St. Mungo. The patron looked in contemplative mood as he studied the " fruit " of the tree which rose from the mound of coal. The " fruit " was represented by coloured inscribed globes naming the bye-products from coal incidental to the manufacture of gas.

St. Mungo appeared to marvel at the wonders weaned from Mother Earth's most gracious bounty to the Glasgow area—coal. From coal, gas; from gas, countless bye-products essential to modern civilization and to man's health and happiness.

It was this mood of contemplation which the novel arrangement of the Gas Department exhibit sought to conjure up in the minds of Glasgow folk. Just as St. Mungo saw the blessings, so might they appreciate the boons which the Gas Industry confers on mankind from cradle to the grave.



AN ORIGINAL GAS EXHIBIT AT A GLASGOW EXHIBITION.

In the pavilion behind the flambeau, shown in our photograph, the wonders of the Industry were more fully demonstrated. In the exhibit there was a " Koh-i-Noor " in " black diamonds." Turning the scale at 4 cwt., it has been carefully treasured at the Tradeston Gas-Works for 40 odd years; and when it arrived there it was a very " precious stone " indeed. At that time a coal trade dispute had forced the Gas Department to seek their supplies overseas, and they brought coal from Australia. It was a chunk from one of these importations that could be seen at the Kelvin Hall. If visitors were in an experimental frame of mind they were permitted to break a fragment from the block, and test its amazing gas content by applying a lighted match.

SOCIETY OF BRITISH GAS INDUSTRIES AT DINNER.

[See "JOURNAL," May 27, p. 562.]

NOTES ON PLANT AND PROCESSES

High Alumina Blocks for Lining Rotary Cement Kilns.

Building construction has made such rapid advances recently that the demand for cement has been almost unprecedented. This has brought about a natural evolution in cement manufacture, and the old shaft kiln has given place to the mammoth rotary kiln of to-day.

In a very interesting brochure on the subject of high alumina blocks for lining rotary cement kilns, Mr. Algernon Lewin Curtis, of Westmoor Laboratory, Chatteris, points out that probably the most important thing to the cement maker is the finding of reliable linings for the burning zone of the modern rotary kiln, and until the high alumina brick was available the life of the linings was very short. Unfortunately, deposits of raw material—suitable for making high alumina bricks—do not occur in this country, and the high cost of transport makes it necessary to manufacture refractories of this character near where the materials occur—the best deposits being found in France.

Mr. Curtis goes on to describe various substitutes for high alumina blocks and their properties and disadvantages, giving photographs and graphs to indicate the behaviour of refractories under load and temperature.

The next section of the brochure describes the Curtis high alumina brick—its characteristics, analyses, and applications. The high refractory value of these bricks is illustrated in a graph, showing the behaviour of three Curtis bricks selected at random from different cement works when tested by Dr. Mellor at 1450° C. for 1½ hours under a load of 25 lbs. per sq. in.; the graph indicates that each brick was stable under load at the temperature of clinkering cement. Illustrations show various types of blocks, while their general advantages are set forth.

Some hints on the setting of lining blocks, together with tables of dimensions, &c., of standard sizes of high alumina blocks of various shapes, complete the subject matter of this useful brochure, while a number of interesting photographs show some of the many cement works using these high alumina blocks.

A New "Bitumastic" Catalogue.

The latest catalogue of Messrs. Wailes Dove Bitumastic, Ltd., of Collingwood Buildings, Newcastle-on-Tyne, strikes a new note in that it is published in no fewer than six languages, and contains full particulars of the various "Bitumastic" protective coatings as used by engineers, shipbuilders, architects, &c., in all countries of the world.

Illustrations show a number of the uses to which "Bitumastic" has been put, including the Panama Canal, where the whole of the 46 pairs of lock gates and the large penstocks are coated with it; pipe lines in Egypt; a photograph of the R.M.S. "Mauretania" on the world's largest floating dock at Southampton, both of which are coated with "Bitumastic"; the lock gates of the Maas Wall Canal, Holland, and others.

After a list of "Bitumastic" specialities and a foreword on the origin of these anti-corrosives, a section goes on to explain the nature of the original black solution. It is stated that this is a brilliant black, quick-drying bituminous solution, having great durability and exceptional anti-corrosive properties. It keys right into the surface and forms an impervious film which effectively keeps out the causes of corrosion. Cracking and peeling from movement of the metal due to changing temperature is entirely prevented by the elastic nature of the solution.

The durability of "Bitumastic" black solution, it is stated, occasioned an enormous demand, yet, in some cases, its blackness proves objectionable. To overcome this objection, without sacrificing protective properties, the makers expended much time and expense on research work, with the result that coloured solutions, possessing the required qualities, have now been universally adopted. The following colours are obtainable: red, brown, stone, cream, green, and grey.

Further sections of this valuable publication deal with "Bitublack" smoke stack solution; "Bituplastic" waterproofing compound; "Bituros," for the preservation of drinking water tanks; "Bitumastic" enamel, dipping solution, &c.

THE "JOURNAL" TECHNICAL RECORD

Which contains Full Reports of Meetings of Gas and Allied Associations

Yorkshire District of the B.C.G.A.

MEETING IN LEEDS

On April 28, a meeting of the Yorkshire District of the British Commercial Gas Association was held at the Queen's Hotel, Leeds, to discuss a series of papers read at the Yorkshire District Conference at Halifax on March 26 last—see "JOURNAL" for April 1, p. 41. Mr. W. B. McLUSKY, of Halifax, presided.

SMOKE ABATEMENT.

Discussing Mr. C. S. Shapley's paper on "Smoke Abatement," Mr. F. H. ROBINSON (Harrogate) said he was convinced that they ought to support Smoke Abatement Societies far more than they did.

Mr. A. C. TAYLOR (Royston) agreed that they had not done all they could to support smoke abatement. Their main contributions to the cause were coke fires and gas for cooking and heating. Could the Gas Industry honestly say that in the past five or seven years it had done all it could to advance the idea of coke fires, in the direction of breaking and grading coke? This had been done, for the most part, only spasmodically; and as soon as the demand had exceeded the supply the policy had been one of "Take it or leave it." As regards gas for cooking, there were few places where the cost of gas was such as to put the cost of gas cooking outside the reach of the poorly paid workers, but as regards gas fires, how many of them could supply gas at a price which put it within the reach, for general heating use, of 90 p.ct. of the people they supplied?

Mr. C. R. INGHAM (Brighouse) said there seemed no reason why they should not sell all their coke for domestic purposes if they made it suitable. If they did that, they would get a better price for it, and that would help to reduce the net cost of gas into the holder, which, in turn, would enable them to reduce their charges for gas. They must seriously tackle the question of gas charges, for only by reducing the charge for domestic service could they make their full contribution to the cause of smoke abatement.

Mr. H. E. BLOOR (York): Our big difficulty in seeking to contribute to the public good by advancing the cause of smoke abatement is that, at present, we have no means of dealing with the source of smoke from the one constant heating centre in each house—I mean the one coal fire. Our contribution to smoke abatement through the increased use of gas depends on our power to make gas available at such a price as to render it a thoroughly economic proposition for continuous heating. York's smoke is being caused almost entirely by that one chimney in each house, and it is the same all over the country. When considering this question, we do not want to allow ourselves to be drawn away too much by the thought of coke. Our main function should be to further the cause of gas, and it is this constant heating load which we want to cultivate for gas. I have the figures of gas consumption per consumer for the whole of the West Riding, and they are astounding reading, and most unsatisfactory. We want a much bigger consumption per consumer. At all places where there is a low consumption per consumer I would suggest that those responsible should look into their possibilities. They have possibilities which are not enjoyed by those places where the price is already low. My opinion is that these places with good works, with surplus capacity, and high capital charges per thousand, are not exploiting as they should the possibilities of differential prices. Discounts for large consumption may be enormous in such cases, but discounts do not provide the solution. What you need are differential charges.

Mr. H. E. COPP (Hull): Regarding the development of the coke trade, we want to devote more attention to the quality of coke, primarily by choosing our coal carefully; and we also want to be quite sure that our coke contains the minimum of moisture—which is the curse of coke for domestic purposes. We should also be more careful with our coke salesmanship. If I may mention a personal note in that connection, I have a man who does nothing else. It is worth noting that we are now getting very serious competition from oil for heating purposes, and that is a growing competition which must receive our attention.

Mr. H. SINGLETON (Huddersfield) said he had just fixed 26 gas fires in the offices of the Medical Officer of Health, Huddersfield.

Mr. N. HUDSON (Mirfield) mentioned that one obstacle in the smoke abatement question was the ignoring of by-laws. He knew cases where there were by-laws limiting the emission of smoke, and they could not find anyone who enforced them. At Mirfield they had had the opportunity of doing something in the way of providing gas for heating, and, on comparative costs, they found that gas at 5d. per therm was a good proposition. They had instituted that price for gas for heating, with a minimum of 40,000 c.ft. per annum.

"THE SWITCHING AGE."

Mr. C. W. WARD (Wakefield), discussing the paper by Mr. H. E. Bloor, said there was one big difficulty in the way of the by-pass idea. In his district the slot meter consumers ran their meters empty, and that raised a problem on the use of the by-pass as suggested by Mr. Bloor.

Mr. BLOOR said he had experienced no difficulty in this respect in York.

A MEMBER: Is not the trouble with most by-passes caused by the accumulation of dust in the channel through which the gas passes? You get by-passes that will remain alight for a time, but then the light gradually gets less and less until it goes out.

Mr. BLOOR: The theory of the new Horstmann by-pass is that you get full pressure up to the nozzle. In some former by-passes you had an adjusting screw, but that is no longer necessary. The favoured method is to make the hole of the nozzle so fine in itself that full pressure comes up to it, and by that means you get a long stiff flame, while the draught is sufficiently strong to blow away any dust that would otherwise deposit. Under the old system you get dust falling down inside the by-pass nozzle; but now the by-pass is fixed at an angle, and there is a cup underneath for any dust there may be. We find that these by-passes have not given us any trouble; one-eighth of a cubic foot per hour we found too delicate, but at one-sixth per hour we found them all right.

Mr. COPP: I have 20 by-passes in one premises. Our practice is to be very careful in testing meters. Each one that goes out is subjected to a by-pass test; and if it does not register at half a cubic foot per hour, we want to know why.

Mr. BLOOR: One difficulty I have about new gas appliances is that manufacturers will not make modern ones to fit my ideas, unless they get a sufficient general response from the Gas Industry. One idea we hear about is a pendant with a tap at the top, just underneath the ball joint. But why have a tap at all? When I put that question to a maker, the man seemed horrified, and asked what would happen when one wanted to get at the burners. I am disposed to think that that extra tap is unnecessary if you have a switch tap, and that, in the small type of house in which this class of appliance is fitted, the meter is so near that you need nothing more than a meter tap and a switch tap.

Mr. A. L. JENNINGS (Cleckheaton): We ought to sell gas by some smaller measure, corresponding more to the unit of electricity. Another point is that every incandescent burner used to have a by-pass, but the Gas Industry discouraged them as bad policy, because the meters did not register by-pass gas. I would prefer to have two meters out of ten which did not register by-pass gas, rather than lose eight out of ten to electricity.

"GAS SUPPLY TO RURAL DISTRICTS."

Mr. SHAPLEY, discussing Mr. F. H. Robinson's paper on this subject, said: Harrogate took a bold policy in going to outlying villages where they did not know what prospects existed for gas service. The Gas Industry ought to think more on those lines. Let me give you a reverse example of what is happening all too frequently. If a man wants to open (say) a fried fish shop near a housing estate with a service of electricity, the usual procedure of the gas company is to go round the immediate district, and see what possible demand there will be if a gas service is installed. That is the wrong way round. We need to take a bolder policy regarding council housing estates, and be there when the houses are being built, and then we are ready for any consumption that may come along. Canvassing yields no reliable indication of possible consumption. Let me give you an example. We had a canvass of Scholes, and received 20 promises. We put in a service of gas and got 200 consumers. On the canvass, we should never have undertaken that piece of enterprise.

Mr. ROBINSON: We had two similar cases in carrying out our rural service scheme. In Nidderdale we had a response of 80

to our canvass, but when we took the risk and laid the service we added about 600. In the Bardsey district we had a canvass, and the response was very poor, but we decided to take the risk in this case also. This district comprises a good deal of modern property, and has had electricity for three years from the Yorkshire Electric Power Company. Speaking from memory, we had under 50 definite undertakings to accept a gas supply, but we covered the district and now have 327 consumers, which is almost every possible house, and the district is still developing.

Heating Large Stores by Gas.

Commenting on the paper by Mr. E. J. Sutcliffe,

Mr. Shapley said: We have realized in Leeds that we have to get big business such as Mr. Sutcliffe has mentioned, and our new scale of charges definitely combats electricity for central heating. We start at 2s. up to the first 100,000 c.ft., and work downward in price at a graduated rate as the consumption increases above 100,000 c.ft. Central heating is a branch of business which the Gas Industry would never get under its present general scales of charges; and, therefore, we in Leeds have put down a special scale for central heating, and we estimate to get our interest and sinking fund charges on the remainder of the consumption. If we can make a small profit on business we should otherwise never get, it is worth while. Does Mr. Sutcliffe make any special charges for these people at Bradford?

Mr. Sutcliffe: They pay the ordinary rate, but we have instituted a block-rate system starting at 8s. 9d. for the first 10,000 c.ft., with a drop of 5d. up to 150,000 c.ft., another drop of 2½d. up to 250,000 c.ft., another 2½d. up to 500,000 c.ft., and another 2½d. up to a million.

Mr. J. E. Holliday (Otley): Why do you fix gas-heated steam radiators instead of flame radiators? I have been considering the fitting of a large building for intermittent heating, and requiring 1000 c.ft. per hour. I have been troubled about the fear of condensation with steam radiators, and the possibility of damage, and I shall be interested to hear that Mr. Sutcliffe has had no such trouble with gas steam heating at Bradford.

Mr. Sutcliffe: We found the gas-heated steam radiator best for the purpose at the large store mentioned.

The Chairman: The difficulty is that gas, at its present price will not displace coal. The chief difficulties in Yorkshire are that we have a good and useful coal—not dirty, though sooty and smoky—and that people feel they cannot do without coal fires in this cold northern climate. They need one fire for general heating and cooking purposes and to keep water hot in the back-boiler, and if you take away that coal fire you must provide a gas-heated water supply. What is required, I suggest, is cheap gas, *plus* good appliances, *plus* good salesmanship. Mr. Shapley and Mr. Bloor have referred to two-part tariffs or differential charges. There may be differences of opinion on the desirability of these, and my contribution to the consideration of the matter is that discounts will not do what we want because discounts are only an effective help in cases where the consumption of gas is high. Discounts, as we know them, are given chiefly to people who use large quantities of gas; and discounts will never reach the domestic user in effective degree. The only way to reach the domestic user is to give him the same consideration, the same scientific equipment, and the same scientific tariff as the large user, and then charge him on consumption. Twenty-four houses using 240,000 c.ft. are just as useful to the gas undertaking as one customer using that amount; and there seems no scientific reason why twenty-four cottages should not have gas at the same price as one person using an equal amount of gas. The only difference to the undertaking is represented by twenty-four service pipes and twenty-four meters and twenty-four accounts, instead of one each in the other case. You have only to adjust your twenty-four service charges as against the one service charge, and there is then no reason why your small consumer should not have gas as cheaply as your large one. I come back, therefore, to my original submission that, if we want to abate smoke, we must have cheap gas.

Association of Statutory Inspectors of Gas Meters

ANNUAL GENERAL MEETING

The Association held their Annual General Meeting on Wednesday, June 3, 1931, at the County Hall, Westminster Bridge, London. Later on the same day the members visited the Meter Workshops of the South Metropolitan Gas Company, at the invitation of the President (Dr. Charles Carpenter) and Directors of the Company.

The President of the Association (Mr. H. N. Barrow, J. P., the Chairman of the Manchester Justices' Gas Meter Testing Committee) was in the chair at the annual general meeting.

Annual Report.

The Council's Report for the year 1930-31 was submitted for adoption. It stated that the principal business dealt with during the year had been the three items (1) Periodical Re-verification; (2) Absorption of Pressure; and (3) Marking of Meters, which matters had occupied the attention of the Association over a considerable period, and, from time to time, had been referred back to the Council for further consideration.

In order to test out the possibility of early amendment to the regulations, and to gather some idea of the Board of Trade's viewpoint with reference to the Association's proposals, the Council appointed a deputation to wait upon the Board to discuss these several items in detail, and to urge the necessity of early action to secure uniformity in practice. The deputation was received by the Deputy Warden of the Standards, who gave sympathetic consideration to the issues raised, and indicated that all these points were being collated against the time when it would be possible to re-model the regulations where necessary, as a whole rather than piecemeal. While the deputation were given no indication when such action would be taken, it was gathered that there would not be undue delay. The Hon. Secretary was requested to submit a memorandum to the Board setting out all suggested amendments, for comparison with the list collated by the Department.

Other matters with which the Report dealt were the stamping of certificated meters and the revision of regulations.

The Council's recommendations with regard to these various matters were then discussed.

Periodical Re-verification.

The Deputy Warden (stated the Report) had explained that the subject of periodical re-verification could not be dealt with by regulation, but would require special legislation which would take time to put into effect. It was also pointed out that the Department could not act upon its own initiative, but would require sufficient evidence of the desire and necessity for such a measure brought to its notice by responsible bodies or organizations to warrant its taking any action in the matter. The Council, in presenting their case, had submitted statistics which amply proved the necessity for such re-verification, and had taken the opportunity to register that it was unlikely upon any subsequent occasion that they would be in a position to support their case with further statistics of this character. Having done this, the Council were convinced that everything possible at the moment had been accomplished, and it would appear that any further representations rested with some combined action on the part of administrative authorities, calling upon the Board of Trade to introduce such a measure.

The Hon. Secretary (Mr. William Templeton) said he had received a letter from the Secretary of the Institution of Gas Engineers, stating that the representatives of that body had compiled much information and statistics since the last meeting with the Association's representatives concerning this matter of periodical re-verification, and were in a position to discuss the matter further if a convenient date could be arranged.

The President said he believed all would agree that it was time something was done to ensure periodical re-verification. He pointed out that the conditions under which matters were working to-day were very different from those applying 25 years ago. Whereas in those earlier days a meter would have to deal with only one or two lights at first, and the amount of gas that would have to pass through it would be increased gradually, to-day meters might have to pass large quantities of gas from the very beginning of their operation. There should be legislation providing for periodical re-verification; and his Committee had passed a resolution urging that ten years should be the maximum period during which a meter should operate without re-verification. He asked the administrative authorities to support him in that connection. It was not the desire of the members of the Association to hamper the Gas Industry, but he urged that such legislation would benefit gas undertakers generally.

Councillor F. T. Baker (Nottingham) agreed that the administrative authorities could help the Council of the Association in regard to this matter, and he urged all members of the Association to present the facts to their Committees or governing bodies so that all the administrative authorities could pass resolutions and forward them to the Board of Trade, thus ensuring concerted action.

Councillor Lister suggested that, in the event of the Association passing a resolution setting out its views as to the period for re-verification, the Hon. Secretary should circularize all administrative authorities and the Association of Municipal Corporations asking for their support. In that way it would be made one man's job to see that something was done in the matter.

This suggestion was supported by several speakers.